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L2: Entry 2 of 8 File: USPT Dec 22, 1998

DOCUMENT-IDENTIFIER: US 5851507 A
TITLE: Integrated thermal process for the continuous synthesis of nanoscale powders

DATE FILED (1):
19960903

Detailed Description Text (20):
Tungsten Oxide: Commercially available tungsten oxide powder (-325 mesh size) was used as the precursor to produce nanosize WO.sub.3. The tungsten oxide powder was suspended in a mixture of argon and oxygen as the feed stream (flow rates were 2.25 ft.sup.3 /min for argon and 0.25 ft.sup.3 /min for oxygen). The reactor was inductively heated with 18 kW of RF plasma to over 5,000K in the plasma zone and about 3,000K in the extended reactor zone adjacent the converging portion of the nozzle. The vaporized stream was quenched through the converging-diverging nozzle. The preferred pressure drop across the nozzle was 250 Torr, but useful results were obtained at different pressure drops, ranging from 100 to 550 Torr. After undergoing a pressure drop of 100 to 550 Torr through the converging-diverging nozzle, the powder produced was separated from the gas by means of a cooled copper-coil-based impact filter followed by a screen filter. FIG. 11 is the TEM nanograph of the WO.sub.3 powder produced by the invention, showing it to be in the 10-25 nanometer range. The size distribution was narrow, with a mean size of about 16.1 nm and a standard deviation of about 6.3 nm. Variations in the operating variables (such as power input, gas pressure, gas flow rates, and nozzle throat size) affected the size of the powder produced. An XRD pattern of the product is shown in FIG. 12, which indicates that the phase present was WO.sub.3. To avoid condensation at the wall, argon was introduced tangentially at the nozzle walls. The inert gas provided cooling as well as a boundary layer to act as a barrier for any condensation on the nozzle walls.

Detailed Description Text (26):
Molybdenum Nitride: Commercially available molybdenum oxide (MoO.sub.3) powder (-325 mesh size) was used as the precursor to produce nanosize Mo.sub.2 N. Argon was used as the plasma gas at a feed rate of 2.5 ft.sup.3 /min. A mixture of ammonia and hydrogen was used as the reactant gases (NH.sub.3 at 0.1 ft.sup.3 /min; H.sub.2 at 0.1 ft.sup.3 /min). The reactor was inductively heated with 18 kW of RF plasma to over 5,000K in the plasma zone and about 3,000K in the extended reactor zone adjacent the converging portion of the nozzle. The vaporized stream was quenched through the

converging-diverging nozzle. The preferred pressure drop across the nozzle was 250 Torr, but useful results were obtained at different pressure drops, ranging from 100 to 550 Torr. The powder produced was separated from the gas by means of a cooled copper-coil-based impact filter followed by a screen filter. FIG. 17 is the TEM nanograph of the Mo.sub.2 N powder produced by the invention, showing it to be in the 5-30 nanometer range. The size distribution was narrow, with a mean size of about 14 nm and a standard deviation of about 4.6 nm. Variations in the operating variables affected the size of the powder produced. An XRD pattern of the product is shown in FIG. 18, which indicates that the phase present was Mo.sub.2 N. To avoid condensation at the wall, argon was introduced tangentially at the nozzle walls. The inert gas provided cooling as well as a boundary layer to act as a barrier for any condensation on the nozzle walls.

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NEWS	4	Apr 09	ZDB will be removed from STN
NEWS	5	Apr 19	US Patent Applications available in IFICDB, IFIPAT, and IFIUDB
NEWS	6	Apr 22	Records from IP.com available in CAPLUS, HCAPLUS, and ZCAPLUS
NEWS	7	Apr 22	BIOSIS Gene Names now available in TOXCENTER
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NEWS	15	Jul 30	NETFIRST to be removed from STN
NEWS	16	Aug 08	CANCERLIT reload
NEWS	17	Aug 08	PHARMAMarketLetter(PHARMAML) - new on STN
NEWS	18	Aug 08	NTIS has been reloaded and enhanced
NEWS	19	Aug 19	Aquatic Toxicity Information Retrieval (AQUIRE) now available on STN
NEWS	20	Aug 19	IFIPAT, IFICDB, and IFIUDB have been reloaded
NEWS	21	Aug 19	The MEDLINE file segment of TOXCENTER has been reloaded
NEWS	22	Aug 26	Sequence searching in REGISTRY enhanced
NEWS	23	Sep 03	JAPIO has been reloaded and enhanced
NEWS	24	Sep 16	Experimental properties added to the REGISTRY file
NEWS	25	Sep 16	Indexing added to some pre-1967 records in CA/CAPLUS
NEWS	26	Sep 16	CA Section Thesaurus available in CAPLUS and CA
NEWS	27	Oct 01	CASREACT Enriched with Reactions from 1907 to 1985
NEWS	28	Oct 21	EVENTLINE has been reloaded
NEWS	29	Oct 24	BEILSTEIN adds new search fields
NEWS	30	Oct 24	Nutraceuticals International (NUTRACEUT) now available on STN
NEWS	31	Oct 25	MEDLINE SDI run of October 8, 2002
NEWS	32	Nov 18	DKILIT has been renamed APOLLIT
NEWS	33	Nov 25	More calculated properties added to REGISTRY
NEWS	34	Dec 02	TIBKAT will be removed from STN
NEWS	35	Dec 04	CSA files on STN

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NEWS LOGIN	Welcome Banner and News Items
NEWS PHONE	Direct Dial and Telecommunication Network Access to STN
NEWS WWW	CAS World Wide Web Site (general information)

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FILE COVERS 1907 - 11 Dec 2002 VOL 137 ISS 24
FILE LAST UPDATED: 10 Dec 2002 (20021210/ED)

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```
=> s nanosiz? (l) (chromium or molybdenum or tungsten or Group VI)
          3467 NANOSIZ?
        291563 CHROMIUM
            74 CHROMIUMS
        291565 CHROMIUM
                 (CHROMIUM OR CHROMIUMS)
        186974 MOLYBDENUM
            34 MOLYBDENUMS
        186978 MOLYBDENUM
                 (MOLYBDENUM OR MOLYBDENUMS)
        149020 TUNGSTEN
            27 TUNGSTENS
        149024 TUNGSTEN
                 (TUNGSTEN OR TUNGSTENS)
       1263486 GROUP
        827523 GROUPS
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       1778314 GROUP
                 (GROUP OR GROUPS)
        195164 VI
         29301 VIS
        224251 VI
                 (VI OR VIS)
          3118 GROUP VI
                 (GROUP(W)VI)
L1         107 NANOSIZ? (L) (CHROMIUM OR MOLYBDENUM OR TUNGSTEN OR GROUP VI)

=> s l1 and sulfid?
       305458 SULFID?
L2          11 L1 AND SULFID?

=> d l2 ibib ab 1-11

L2   ANSWER 1 OF 11  CAPLUS  COPYRIGHT 2002 ACS
ACCESSION NUMBER:         2001:904416  CAPLUS
DOCUMENT NUMBER:          136:40031
TITLE:                    Nanosized particles of molybdenum
                          sulfide and derivatives and uses thereof
INVENTOR(S):              Migdal, Cyril A.; Stott, Paul E.; Bakunin, Victor N.;
                          Parenago, Oleg P.; Kuz'mina, Galina N.; Vedeneeva,
                          Ludmila M.; Suslov, Andrei Yu
PATENT ASSIGNEE(S):       Crompton Corporation, USA
SOURCE:                   PCT Int. Appl., 70 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE          APPLICATION NO.  DATE
     ---------------   ----  --------      ---------------  --------
     WO 2001094504      A2   20011213      WO 2001-US14982  20010508
     WO 2001094504      A3   20020613
         W:  AU, BR, CA, IN, JP, KP, KR, MX, RU, SG, US, ZA
         RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
             PT, SE, TR
PRIORITY APPLN. INFO.:                  US 2000-208573P  P  20000602
OTHER SOURCE(S):          MARPAT 136:40031
AB   A lubricant compn. is disclosed that comprises: (a) a lubricant and (b) at
     least one molybdenum-contg. compd. in the form of surface-capped
     nanosized particles of the general formula: (Z)n(X-R)m wherein Z
     is an inorg. moiety comprising molybdenum and sulfur in the form
     of particles having dimensions in the range of from .apprx.1 to .apprx.100
     nm; (X-R) is a surface-capping reagent wherein R is a C4 to C20 straight
     or branched-chain alkyl or alkylated cycloalkyl radical or radicals and X
     is a functional group capable of specific sorption and/or chem.
     interaction with molybdenum/sulfur moiety; n is the no. of mols.
     of Z in the particles; m is an integer representing the amt. of
     surface-capping reagents relative to a single particle; and the ratio of m
     to n is in the range of from .apprx.1:1 to .apprx.10:1.

L2   ANSWER 2 OF 11  CAPLUS  COPYRIGHT 2002 ACS
ACCESSION NUMBER:         2000:221191  CAPLUS
DOCUMENT NUMBER:          132:224422
TITLE:                    Preparation and structural characterization of
                          nano-sized amorphous powders of MoS2 by
                          .gamma.-irradiation method
AUTHOR(S):                Chu, G.; Bian, G.; Fu, Y.; Zhang, Z.
CORPORATE SOURCE:         Department of Applied Chemistry, University of Science
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and Technology of China, Hefei, Peop. Rep. China
SOURCE: Materials Letters (2000), 43(3), 81-86
CODEN: MLETDJ; ISSN: 0167-577X
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Nanosize** amorphous powders of **molybdenum** disulfide have been prepd. by .gamma.-irradn. method in ambient pressure and at room temp. The obtained ppt. was dried at 60.degree., then crystd. by calcination in a flow of argon at 160-650.degree.. All the samples were characterized by x-ray diffraction and extended x-ray absorption fine structure (EXAFS). The results from x-ray diffraction anal. reveal that the powder dried at 60.degree. is in an amorphous state; it was partly crystd. when calcined at >300.degree.. The size of particles in the sample calcined at 500.degree. is .apprx.10 nm. EXAFS anal. demonstrates that the Mo species in the sample dried at 60.degree. are present in the form of a chain-like structure with Mo-S-Mo bonds as basic building units, similar to that in the cryst. MoS2 compd., and with a high level of disorder in the nearest coordination shell. The amorphous sample is partly crystd. by treating at >300.degree., and some of the Mo-S-Mo bonds are fractured to form Mo:S bonds in the process of crystn., but the level of crystn. is still low even when treated at 650.degree.. Total sulfur anal. shows that the sulfur is partly lost when the sample was calcined at >300.degree..
REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 3 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:170821 CAPLUS
DOCUMENT NUMBER: 132:199569
TITLE: Catalysis assisted characterizations of nanosized TiO2-Al2O3 mixtures obtained in molten alkali metal nitrates. Effect of the metal precursor
AUTHOR(S): Harle, V.; Vrinat, M.; Scharff, J. P.; Durand, B.; Deloume, J. P.
CORPORATE SOURCE: Institut de Recherche sur la Catalyse (CNRS), Villeurbanne, F-69626, Fr.
SOURCE: Applied Catalysis, A: General (2000), 196(2), 261-269
CODEN: ACAGE4; ISSN: 0926-860X
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Mixts. of TiO2 and Al2O3 (0, 5, 10 and 20 mol% Al2O3) were prepd. by reaction of metal salts with molten alkali metal nitrates. The powders are constituted from nanosized anatase crystallites and amorphous alumina. Physico-chem. characterizations reveal the powders to be homogeneous. Ni-Mo **sulfide** catalysts were elaborated using these powders as supports and tested in the reaction of hydrogenation of tetralin. The decrease of the intrinsic catalytic activity per Mo atom, related to the alumina content, is higher than expected for a regular mixing of oxides, suggesting that alumina coats the anatase particles. On the contrary, it was found that changing the aluminum precursor salt leads to a metastable solid soln. which increases significantly the intrinsic activity.
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:77495 CAPLUS
DOCUMENT NUMBER: 130:99150
TITLE: Calcining mixtures with a polymer and metal salt for preparation of ultrafine metal powder
INVENTOR(S): Gruenbauer, Henri J.; Broos, Jacobus A.; Van Buren,

Frederik R.
PATENT ASSIGNEE(S): The Dow Chemical Company, USA
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9903627	A1	19990128	WO 1998-US12306	19980612
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5998523	A	19991207	US 1997-896774	19970718
AU 9882561	A1	19990210	AU 1998-82561	19980612
AU 731338	B2	20010329		
EP 998363	A1	20000510	EP 1998-932749	19980612
EP 998363	B1	20020327		
R: AT, BE, CH, DK, ES, FR, GB, GR, LI, LU, NL, SE, PT				
BR 9810720	A	20000808	BR 1998-10720	19980612
JP 2001510237	T2	20010731	JP 2000-502907	19980612
AT 214989	E	20020415	AT 1998-932749	19980612
ZA 9806370	A	20000117	ZA 1998-6370	19980717
TW 432008	B	20010501	TW 1998-87111701	19980717

PRIORITY APPLN. INFO.: US 1997-896774 A 19970718
WO 1998-US12306 W 19980612

AB The solid-phase mixt. suitable for pyrolysis or calcination to fine metal powder contains: (a) liq. hydrophilic org. polymer, esp. a polyether polyol; (b) aq. salt soln. contg. the target metal at preferably .gtoreq.5%; and (c) coagulating agent, esp. alk. amine, amide, or alkanolamine. The mixt. is calcined to form the metal powder having av. particle size .ltoreq.1 .mu.m and sp. surface area .gtoreq.5 m2/g, and typically selected from transition metals, rare-earth metals, or heavy metals. The resulting metal powders are suitable for prepn. of industrial catalysts, ceramics, or electronic components, or for fillers in plastics or paint coatings. The typical mixts. for calcining at 700.degree. to obtain the powder having .apprx.20 nm particle size contain: oxypropylene polyol (mol. wt. 1000) at 30 wt. parts; ZrO(NO3)2.xH2O and Ce(NO3)3.6H2O at 6.14:1 wt. ratio, dissolved at 50 g in 40 g water, and used at 90 wt. parts; and aq. 25% NH4OH at 20 or 60 wt. parts. The similar mixts. prepd. with dry salts typically showed the particle size of .apprx.100 nm.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 5 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:793414 CAPLUS
DOCUMENT NUMBER: 130:117206
TITLE: Photooxidation of Organic Chemicals Catalyzed by Nanoscale MoS2
AUTHOR(S): Thurston, T. R.; Wilcoxon, J. P.
CORPORATE SOURCE: Sandia National Laboratories, Albuquerque, NM, 87108, USA
SOURCE: Journal of Physical Chemistry B (1999), 103(1), 11-17
CODEN: JPCBFK; ISSN: 1089-5647
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal
LANGUAGE: English
AB The authors describe expts. that explore the use of nanosize MoS2 semiconductors for catalyzing the photooxidn. of phenol. The band gap of nanoscale MoS2 can be tuned across the visible spectrum and d = 4.5 nm MoS2 which has an absorbance edge near 550 nm photooxidizes phenol using only visible light (>450 nm) while smaller band gap d = 8-10 nm MoS2 or wide band gap Degussa P-25 TiO2 do not. The possibility of increasing the rate of photooxidn. of phenol by deposition of nanoclusters of MoS2 on bulk semiconductor powders is studied. Small amts. (<5%) of nanoscale MoS2 deposited onto TiO2 can lead to significant (.apprx.2-fold) enhancements of phenol destruction rates compared to TiO2 by itself.
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 6 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:569133 CAPLUS
DOCUMENT NUMBER: 129:168427
TITLE: x-ray diffraction investigation on MoS2 nanoparticles produced by CO2 laser-assisted synthesis
AUTHOR(S): Borsella, E.; Botti, S.; Cesile, M. C.; Martelli, S.; Nesterenko, A.
CORPORATE SOURCE: Div. Fisica Applicata, ENEA, Frascati, I-00044, Italy
SOURCE: Materials Science Forum (1998), 278-281(Pt. 2, Proceedings of the Fifth European Powder Diffraction Conference, 1997), 636-641
CODEN: MSFOEP; ISSN: 0255-5476
PUBLISHER: Trans Tech Publications Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB CO2 laser synthesis from gaseous precursor was successfully applied to produce **nanosized** MoS2 particles. **Molybdenum** hexacarbonyl [Mo(CO)6] and hydrogen **sulfide** were used as gas phase reactants. A detailed x-ray diffraction anal. of the as-synthesized powder confirmed the **nanosize** character of the MoS2 powder (x-ray size .apprx.3 nm) and showed that the particle structure could be described as a turbostratically stacked layered system. After thermal treatment at 1000.degree. the powder underwent a restacking and ordering process. The x-ray reflection intensities and the line profile anal. of the (001) diffraction lines showed the retaining of turbostratic disorder and the appearance of "paracryst." distortions in the MoS2 sandwich layers with an av. fluctuation parameter of g = 0.02.

L2 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:792383 CAPLUS
DOCUMENT NUMBER: 128:68372
TITLE: Studies of photoredox reactions on nanosize semiconductors
AUTHOR(S): Wilcoxon, Jess P.; Parsapour, F.; Kelley, D. F.
CORPORATE SOURCE: Sandia National Laboratories, Albuquerque, NM, USA
SOURCE: Proceedings - Electrochemical Society (1997), 97-11(Quantum Confinement: Nanoscale Materials, Devices, and Systems), 16-27
CODEN: PESODO; ISSN: 0161-6374
PUBLISHER: Electrochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Light induced electron transfer (ET) from nanosize semiconductors of MoS2 to org. electron acceptors such as 2,2'-bipyridine (bpy) and Me substituted 4,4',5,5'-tetramethyl-2,2'-bipyridine (tmb) was studied by static and time resolved photoluminescence spectroscopy. The kinetics of ET were varied by changing the nanocluster size (the band gap), the

electron acceptor, and the polarity of the solvent. MoS2 is an esp. interesting semiconductor material as it is an indirect semiconductor in bulk form, and has a layered covalent bonding arrangement which is highly resistant to photocorrosion. ET occurs following photoexcitation of the direct band gap. Quantum confinement results in the smaller nanoclusters having higher conduction band energies, and therefore larger ET driving forces. The ET reaction energies may be varied by changing the electron acceptor, by varying the size of the MoS2 nanocluster or by varying the polarity of the solvent. In addn., varying the polarity of the solvent affects the reorganization energy and the barrier to electron transfer. TMB is harder to reduce, and thus has a smaller ET driving force than bpy. The solvent polarity is varied by varying the compn. of acetonitrile/benzene mixed solvents.

L2 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:217219 CAPLUS
DOCUMENT NUMBER: 126:323873
TITLE: Studies of photoredox reactions on nanosize semiconductors
AUTHOR(S): Wilcoxon, Jess P.; Parsapour, F.; Kelley, D. F.
CORPORATE SOURCE: Sandia National Laboratories, Albuquerque, NM, USA
SOURCE: Materials Research Society Symposium Proceedings (1997), 452(Advances in Microcrystalline and Nanocrystalline Semiconductors--1996), 601-606
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Light induced electron transfer (ET) from nanosize semiconductors of MoS2 to org. electron acceptors such as 2,2'-bipyridine (bpy) and Me substituted 4,4',5,5',-tetramethyl-2,2'-bipyridine (tmb) was studied by static and time resolved photoluminescence spectroscopy. The kinetics of ET were varied by changing the nanocluster size (the band gap), the electron acceptor, and the polarity of the solvent. MoS2 is an esp. interesting semiconductor material as it is an indirect semiconductor in bulk form, and has a layered covalent bonding arrangement which is highly resistant to photocorrosion.

L2 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:500364 CAPLUS
DOCUMENT NUMBER: 122:276921
TITLE: Optical features of **nanosize** iron and **molybdenum sulfide** clusters
AUTHOR(S): Wilcoxon, J. P.; Samara, G.; Newcomer, P.
CORPORATE SOURCE: Org. 1152, Sandia Natl. Lab., Albuquerque, NM, 87185, USA
SOURCE: Materials Research Society Symposium Proceedings (1995), 358(Microcrystalline and Nanocrystalline Semiconductors), 277-81
CODEN: MRSPDH; ISSN: 0272-9172
PUBLISHER: Materials Research Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB In the bulk state FeS2 and MoS2 are optically opaque, narrow bandgap semiconductors with no optical applications. Nanosize FeS2 and MoS2 have bandgaps that can be adjusted to the visible and even UV region of the spectrum by control of the cluster size. This opens up a host of applications of these materials. as inexpensive solar photocatalysts. The band-gap of both materials shifts to the blue with decreasing size but ceases shifting when a size of .apprx.3 nm (in the case of MoS2) is attained. The authors interpret this observation as a change from bulk quantum confinement of the hole-electron pair of a tiny semiconductor to a

set of discrete mol.-like transitions more characteristic of a large mol. Room temp. photoemission studies of these clusters demonstrate that, while photoemission shifts to the blue with increasing bandgap for large clusters, small clusters have photoemission exclusively from trapped sub-bandgap surface states. Chem. modification of the surface to introduce hole or electron traps can result in either an enhancement or a decrease in the photoluminescence. The authors report the results concerning chem. purifn. and preliminary surface characterization of MoS2 clusters by chromatog.

L2 ANSWER 10 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:228187 CAPLUS
DOCUMENT NUMBER: 120:228187
TITLE: Microemulsion-mediated synthesis of **nanosize molybdenum sulfide** particles
AUTHOR(S): Boakye, E.; Radovic, L. R.; Osseo-Asare, K.
CORPORATE SOURCE: Dep. Mater. Sci. Eng., Pennsylvania State Univ., University Park, PA, 16802, USA
SOURCE: Journal of Colloid and Interface Science (1994), 163(1), 120-9
CODEN: JCISA5; ISSN: 0021-9797
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A microemulsion-based method for the synthesis of molybdenum **sulfide** nanoparticles is reported. Molybdenum **sulfide** particles in the size range 10-80 nm were pptd. in water-in-oil microemulsions (water-contg. inverse micelles) formulated with polyoxyethylene (5) nonylphenyl ether (NP-5). The particles were synthesized in the NP-5/cyclohexane/water microemulsion system by acidifying ammonium tetrathiomolybdate solubilized in the water cores of the inverse micelles. Particle characterization was accomplished by chem. anal., transmission electron microscopy, and UV/visible spectroscopy. The small size and the cage-like nature of the microemulsion water cores limits particle growth and aggregation. The particle size is a function of the water-to-surfactant molar ratio and the av. no. of ammonium tetrathiomolybdate ions solubilized per water core. These trends are rationalized in terms of classical nucleation theory and aggregative growth concepts.

L2 ANSWER 11 OF 11 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1992:197430 CAPLUS
DOCUMENT NUMBER: 116:197430
TITLE: Microemulsion-mediated synthesis of **nanosize molybdenum sulfide** coal liquefaction catalysts
AUTHOR(S): Boakye, E.; Vaidyanathan, N.; Radovic, L. R.; Osseo-Asare, K.
CORPORATE SOURCE: Dep. Mater. Sci. Eng., Pennsylvania State Univ., University Park, PA, 16802, USA
SOURCE: Preprints of Papers - American Chemical Society, Division of Fuel Chemistry (1992), 37(1), 298-305
CODEN: ACFPAI; ISSN: 0569-3772
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Nanosize Mo **sulfide** particles have been synthesized in 0.134 M NP-5/cyclohexane/water and 0.4 M NP-5/Tetralin/benzyl alc./water microemulsions. The particle size varies with the water-surfactant molar ratio. The synthesis of Mo **sulfide** in Tetralin has potentially important technol. applications since catalyst prepn. does not involve particle harvesting. Advantage can be taken of the variation of particle size with the water-to-surfactant molar ratio to make particles of desired sizes for coal liquefaction. Liquefaction tests conducted is so far have

given high yields of hexane-sol. oils and the yield of oils is inversely proportional to particle size.

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TERMINAL (ENTER 1, 2, 3, OR ?):2

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NEWS 1		Web Page URLs for STN Seminar Schedule - N. America
NEWS 2	Apr 08	"Ask CAS" for self-help around the clock
NEWS 3	Apr 09	BEILSTEIN: Reload and Implementation of a New Subject Area
NEWS 4	Apr 09	ZDB will be removed from STN
NEWS 5	Apr 19	US Patent Applications available in IFICDB, IFIPAT, and IFIUDB
NEWS 6	Apr 22	Records from IP.com available in CAPLUS, HCAPLUS, and ZCAPLUS
NEWS 7	Apr 22	BIOSIS Gene Names now available in TOXCENTER
NEWS 8	Apr 22	Federal Research in Progress (FEDRIP) now available
NEWS 9	Jun 03	New e-mail delivery for search results now available
NEWS 10	Jun 10	MEDLINE Reload
NEWS 11	Jun 10	PCTFULL has been reloaded
NEWS 12	Jul 02	FOREGE no longer contains STANDARDS file segment
NEWS 13	Jul 22	USAN to be reloaded July 28, 2002; saved answer sets no longer valid
NEWS 14	Jul 29	Enhanced polymer searching in REGISTRY
NEWS 15	Jul 30	NETFIRST to be removed from STN
NEWS 16	Aug 08	CANCERLIT reload
NEWS 17	Aug 08	PHARMAMarketLetter(PHARMAML) - new on STN
NEWS 18	Aug 08	NTIS has been reloaded and enhanced
NEWS 19	Aug 19	Aquatic Toxicity Information Retrieval (AQUIRE) now available on STN
NEWS 20	Aug 19	IFIPAT, IFICDB, and IFIUDB have been reloaded
NEWS 21	Aug 19	The MEDLINE file segment of TOXCENTER has been reloaded
NEWS 22	Aug 26	Sequence searching in REGISTRY enhanced
NEWS 23	Sep 03	JAPIO has been reloaded and enhanced
NEWS 24	Sep 16	Experimental properties added to the REGISTRY file
NEWS 25	Sep 16	Indexing added to some pre-1967 records in CA/CAPLUS
NEWS 26	Sep 16	CA Section Thesaurus available in CAPLUS and CA
NEWS 27	Oct 01	CASREACT Enriched with Reactions from 1907 to 1985
NEWS 28	Oct 21	EVENTLINE has been reloaded
NEWS 29	Oct 24	BEILSTEIN adds new search fields
NEWS 30	Oct 24	Nutraceuticals International (NUTRACEUT) now available on STN
NEWS 31	Oct 25	MEDLINE SDI run of October 8, 2002
NEWS 32	Nov 18	DKILIT has been renamed APOLLIT
NEWS 33	Nov 25	More calculated properties added to REGISTRY
NEWS 34	Dec 02	TIBKAT will be removed from STN
NEWS 35	Dec 04	CSA files on STN

NEWS EXPRESS	October 14 CURRENT WINDOWS VERSION IS V6.01, CURRENT MACINTOSH VERSION IS V6.0a(ENG) AND V6.0Ja(JP), AND CURRENT DISCOVER FILE IS DATED 01 OCTOBER 2002
NEWS HOURS	STN Operating Hours Plus Help Desk Availability
NEWS INTER	General Internet Information
NEWS LOGIN	Welcome Banner and News Items
NEWS PHONE	Direct Dial and Telecommunication Network Access to STN
NEWS WWW	CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that specific topic.

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FILE 'HOME' ENTERED AT 16:28:05 ON 11 DEC 2002

=> file caplus

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FULL ESTIMATED COST	0.21	0.21

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FILE COVERS 1907 - 11 Dec 2002 VOL 137 ISS 24
FILE LAST UPDATED: 10 Dec 2002 (20021210/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

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=> s nanosiz? particles (3a) (better or advantag?)
          3467 NANOSIZ?
        627433 PARTICLES
             1 PARTICLESES
        627433 PARTICLES
                 (PARTICLES OR PARTICLESES)
           397 NANOSIZ? PARTICLES
                 (NANOSIZ?(W)PARTICLES)
        291743 BETTER
            23 BETTERS
        291764 BETTER
                 (BETTER OR BETTERS)
        216286 ADVANTAG?
L1           2 NANOSIZ? PARTICLES (3A) (BETTER OR ADVANTAG?)

=> d l1 ibib ab 1-2
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L1 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:820268 CAPLUS
DOCUMENT NUMBER: 136:73137
TITLE: High-purity glasses and ceramics prepared by sintering compacts of **nanosized particles: advantages** and perspectives
AUTHOR(S): Clasen, Rolf
CORPORATE SOURCE: Department of Powder Technology, Saarland University, Saarbrucken, D-66123, Germany
SOURCE: Key Engineering Materials (2002), 206-213(Pt. 1, Euro Ceramics VII), 235-238
CODEN: KEMAEY; ISSN: 1013-9826
PUBLISHER: Trans Tech Publications Ltd.
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review. The prepn. of high-purity glasses and ceramics via shaping and sintering of compacts of nanosized powders offers many perspectives for optical materials. Due to small diffusion paths inside a nanosized particle impurities can be efficiently removed in a reactive atm. This is state of the art for the prepn. of high-purity glasses for optical fibers. Alternatively, all kinds of dopings can be added to the compact before sintering. Of special interest are functional nanosized particles, which can be incorporated into the compact through the open pores. The starting materials used were made by flame hydrolysis. Com. available at a low price are silica glass powders (8-40 nm in size), alumina, zirconia and titania (20-30 nm in size). These powders are well suited for the prepn. of advanced materials because they are nonporous and spherical. For addnl. applications, esp. in the field of coatings, pure silica powders are not sufficient due to the small thermal expansion coeff. Therefore the flame hydrolysis process was modified and multicomponent (e.g. SiO2, B2O3, Na2O, Al2O3) nanosized glass powders were prepd. Compacts of these powders can be sintered to transparent coatings at temps. down to 650.degree.C.
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:765507 CAPLUS
DOCUMENT NUMBER: 123:304932
TITLE: Small-angle scattering with polarized neutrons at very low temperatures: A new spectrometer at ORPHEE
AUTHOR(S): Glaettli, H; Eisenkremer, M; Pinot, M; Fermon, C
CORPORATE SOURCE: DRECAM/SPEC, DSM, CEA Saclay, Gif sur Yvette, 91191, Fr.
SOURCE: Physica B: Condensed Matter (Amsterdam) (1995), 213&214(1-4), 887-8
CODEN: PHYBE3; ISSN: 0921-4526
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A spectrometer for small-angle scattering with polarized neutrons was installed at the ORPHEE reactor. It uses a beam of 8.0 .+-. 0.5 .ANG. deflected from the cold neutron guide G5 by Ni-Ti multilayers and polarized by a supermirror. A superconducting magnet with a homogeneous horizontal field of 3.5 T and a diln. insert which cools a 4He-filled sample cavity to 0.2 K makes this spectrometer particularly suited for studies of spin-contrast variation using dynamic nuclear polarization. Examples of polarization-dependent scattering from polymers demonstrate the power of this method. Polarized neutrons are also an **advantage** in studying magnetic **nanosize particles**, e.g. to sep. the magnetic and nuclear contributions to

small-angle scattering.

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=> s nanosiz? particles (3a) superior?
          3467 NANOSIZ?
        627433 PARTICLES
             1 PARTICLESES
        627433 PARTICLES
                  (PARTICLES OR PARTICLESES)
           397 NANOSIZ? PARTICLES
                  (NANOSIZ?(W)PARTICLES)
        122360 SUPERIOR?
L2           0 NANOSIZ? PARTICLES (3A) SUPERIOR?

=> s nanosiz? particles (3a) enhance?
          3467 NANOSIZ?
        627433 PARTICLES
             1 PARTICLESES
        627433 PARTICLES
                  (PARTICLES OR PARTICLESES)
           397 NANOSIZ? PARTICLES
                  (NANOSIZ?(W)PARTICLES)
        653428 ENHANCE?
L3           1 NANOSIZ? PARTICLES (3A) ENHANCE?

=> d l3 ibib ab

L3   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2002 ACS
ACCESSION NUMBER:         1997:451796  CAPLUS
DOCUMENT NUMBER:          127:179960
TITLE:                    The effect of particle solubility on the strength of
                          nanocrystalline agglomerates: boehmite
AUTHOR(S):                Kwon, Seongtae; Messing, G. L.
CORPORATE SOURCE:         Dep. Mater. Sci. Eng., Particulate Mater. Cent.,
                          Pennsylvania State Univ., University Park, PA, 16802,
                          USA
SOURCE:                   Nanostructured Materials (1997), 8(4), 399-418
                          CODEN: NMAEE7; ISSN: 0965-9773
PUBLISHER:                Elsevier
DOCUMENT TYPE:            Journal
LANGUAGE:                 English
AB   Nanosized powders readily agglomerate during processing and handling.  The
     strength of the interparticle bonds can dramatically affect the strength
     of the agglomerates and subsequent consolidation.  This paper focuses on
     the origin of agglomerate strength for <10 nm sized boehmite
     (.gamma.-AlOOH) powders.  The agglomerate strength of boehmite gel is
     (.apprxeq.23 MPa) more than three times higher than ethanol-dispersed
     boehmite agglomerate.  Based on a series of expts., it is demonstrated
     that soly. of the nanomaterials is largely responsible for increased
     agglomerate resistance to deformation and powder consolidation.  A model
     is presented to explain how agglomerate strength increases as a result of
     the enhanced soly. of nanosize particles and
     pptn. of the solute at particle contacts during drying.
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